

Technical Memorandum

Appendix D Stormwater Management Cost Information

PREPARED FOR: Washington Stormwater Policy Advisory Committee

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This memo serves as a summary of the available cost information for stormwater management programs in Washington. Estimates of stormwater program costs were compiled from stakeholder interviews, information provided by stakeholders, and selected literature sources containing cost information. A wide range of costs was quoted from these sources; no quality assurance or validation of these cost estimates was conducted. Within the costs there is variation on attributes which accounts for some of the disparity. This summary does not endorse or give legitimacy to one cost estimating approach or estimate over any other approach or estimate. It is clear, however, that there are many approaches and many current sources of funding for stormwater programmatic and capital investments, which are factors leading to in the wide range of costs identified in this summary.

Several stakeholder interviewees responded that stormwater costs are difficult to predict, mostly because regulatory requirements and stormwater management goals are unclear at this time. Several interviewees also expressed concerns that it is unclear based on the science to date whether water quality standards can be met and beneficial uses restored in many of the already urbanized watersheds through the implementation of reasonable mitigation and control measures. Many interviewees estimated that new costs from National Pollutant Discharge Elimination System (NPDES) Phase 2 and Endangered Species Act (ESA) regulatory requirements will be significantly high. Many jurisdictions cannot afford these programs, and would be forced to either raise stormwater rates or fees, or shift money from other programs to fund stormwater programs.

The Local Government Infrastructure Study conducted in 1999 by the Washington Department of Community, Trade, and Economic Development found that a significant funding gap for stormwater projects exists. The 324 jurisdictions that submitted information on funding needs identified a total need of \$0.57 billion for stormwater projects from 1998 to 2003. Funding sources and amounts for stormwater projects reported by these jurisdictions totaled \$0.27 billion, thus

producing a \$0.30 billion funding gap. This funding gap was equal to 52 percent of the stormwater funding need. This funding gap was the largest of any of the study's infrastructure categories (roads, bridges, domestic water, sanitary sewer, stormwater).¹

According to the U.S. Environmental Protection Agency (EPA), the total national cost to local governments to implement a Phase 2 stormwater program is estimated to be \$297 million. The EPA used actual program costs from Phase 2-size communities in its estimates and assumed that all communities would incur costs relative to their population size. The EPA estimates that Phase 2 jurisdictions will incur an annual "fixed" cost of \$1,525 for administrative record-keeping and reporting activities, and a "variable" cost of \$8.93 per household for annual operations of the six Phase 2 minimum control measures.²

Clark County has historically spent \$4 million per year on its stormwater program. New activities will require another \$4.5 million to \$5 million per year, for a total of \$8.5 million to \$9 million per year.³

In 1998, Clark County staff identified \$43 million in priority capital projects in the Lakeshore and Salmon Creek Watershed areas (the main urbanized watershed in unincorporated Clark County) as part of a proposed watershed plan for this basin. Most of these projects were related to flood management with some water quality issues addressed. Due in a large part to citizen concerns about the stormwater fee implications, the plan was not adopted by the Clark County commissioners. As part of that same planning effort, the county estimated that it would cost more than \$240 million in capital costs over 20 years to comprehensively address the water quality and flooding issues in the Lakeshore and Salmon Creek Watershed areas.

Clark County has budgeted more than \$43 million for capital projects in the Lakeshore and Salmon Creek Watershed areas during the next 6 years. These costs are broken down as follows:⁴

Watershed Area	Total Capital Cost
Lakeshore Area	\$ 7,939,013
Salmon Creek Rural Area	\$ 3,014,853
<u>Salmon Creek Urban Area</u>	<u>\$32,081,398</u>
Total	\$43,035,264

¹ 1999 Local Government Infrastructure Study, Washington Public Works Board, Washington Department of Community, Trade, and Economic Development.

² Eagan, Patrick, Ph.D., P.E. "Funding Compliance with Stormwater Phase II Requirements." *Public Works*, July 2000, pp. 18-22.

³ Interview with Brian Carlson, Clark County, August 2000.

⁴ "County Wide CIP Dollars" memorandum from Earl Rowell, Clark County, September 14, 2000.

King County reported the following annual costs⁵:

Drainage and habitat capital projects	\$796,701
Complaint investigation and code enforcement	\$410,781
Stormwater facility management	\$ 44,651
Agricultural drainage and water quality	\$511,093
Watershed assessment	\$268,827
Groundwater monitoring	\$204,652
Environmental stewardship programs	\$263,973

The division's 2001 capital improvement plan (CIP) budget request for stormwater projects is \$3,073,000.

King County has not yet calculated the costs for overall stormwater programs, but estimated \$3,580,000 during the next 8 years for the cost of compliance with NPDES Phase 1 and ESA 4(d). This reflects the cost of additional full-time equivalents (FTEs) necessary to do work that will be required over and above the current level of service. Many King County agencies anticipate increasing fees or possibly developing new fees to pay for these increased costs. King County Department of Transportation's Road Maintenance Operations Section will have to cut major maintenance and capital construction programs and increase sales taxes to pay for new stormwater programs. The Water and Land Resources Division's Rural Drainage Services Section pays for all costs with Surface Water Management fees (approximately \$1,417 per acre of impervious surface). The Surface Water Engineering and Environmental Services Section will fund new programs with bonds, surface water service fees, and grants. The county's Water and Land Resources Division's Water Resources Inventory Area (WRIA) 9 Team and Green River Water Quality Assessment group will fund increased monitoring efforts with wastewater funds and potential funds from the Washington Department of Ecology (Ecology) (in support of total maximum daily load [TMDL] efforts), local jurisdictions (through an inter-local agreement), and possibly EPA.

Pierce County Water Programs currently collects \$13 million; \$6 million is for CIP projects and \$800,000 is for NPDES compliance. Projected new costs are \$6 million for NPDES compliance and \$6 million for ESA. Pierce County Water Programs currently has no plans to raise funds.⁶

Seattle Public Utilities (SPU) estimated \$15 million to \$20 million per year for stormwater programs (staff, outreach, etc.). This does not include capital projects, which will cost another \$15 million to \$20 million. SPU

⁵ King County written responses to Stormwater Management Study interview questions, August 17, 2000.

⁶ Interview with Heather Kibbey, Pierce County Water Programs, August 14, 2000.

expects to raise drainage rates within the next 4 years to pay for the new requirements.⁷

Snohomish County is implementing Master Drainage Planning and Salmon Recovery Planning programs to meet stormwater and ESA requirements. These two programs have been funded at \$1 million each for staffing, and both may be increased by another \$1 million this year. Implementation of large capital improvements may cost \$1 million to \$2 million in infrastructure, and \$3 million may be spent on habitat projects. Funding for these programs and projects are generated through stormwater fees, a real estate excise tax, and grants.⁸

Spokane County identified the need for \$65 million over 20 years to construct regional stormwater facilities. The county has not estimated operations and maintenance costs for stormwater, but has estimated the need for 15 new staff. The county's utility is looking into increased stormwater rates, system development charges for new development, and outside sources of funding to meet these funding needs.⁹

The City of Tacoma will be required to comply with new sanitary sewer overflow (SSO) regulations that will require extensive capital projects. The city has estimated that SSO compliance will cost \$68 million.¹⁰

The City of Yakima estimated the costs of a stormwater utility for compliance with stormwater management requirements, especially the six minimum control measures of the NPDES Phase 2 requirements. The estimated total annual costs are:¹¹

Public education	\$ 80,000
Illicit discharge detection and elimination	\$ 225,400
Construction site runoff control	\$ 117,500
Post-construction runoff control	\$1,080,000
Stormwater capital	\$3,700,000
ESA capital	\$6,300,000
Pollution prevention/good housekeeping	\$ 942,100
<u>Program administration</u>	<u>\$ 935,000</u>
Total	\$3,380,000

This estimate of annual costs includes increased staffing (from 10 to 17), the amortization of all equipment, and ancillary costs. The City of Yakima already has spent \$10,000 to \$15,000 on technical assistance, and \$500,000 on development of a Stormwater Manual and Design Standards. The city does not have sufficient resources to cover these stormwater program

⁷ Interview with Robert Chandler, Seattle Public Utilities, August 14, 2000.

⁸ Interview with Joan Lee, Snohomish County Surface Water Management Division, August 25, 2000.

⁹ Interview with Brenda Sims, Spokane County Public Works, August 16, 2000.

¹⁰ Interview with John Stetson, City of Tacoma Public Works, August 23, 2000.

¹¹ "Stormwater Impacts-EPA Phase II Storm Water Regulations" memorandum prepared for Chris Waarvick, City of Yakima, by Tony Krutsch, HDR.

costs. The city is considering creating a stormwater utility and potentially raising water, irrigation, and sewer rates. Passage of Initiative (I) 695 cost the city \$2.2 million.¹²

The City of Walla Walla estimated that the costs provided by Yakima would need to be doubled to comply with RCW 90.48. Walla Walla set up a stormwater utility that began collecting funds in 1999.¹³

Washington State Department of Transportation (WSDOT), Environmental Affairs Office, budgeted the following stormwater costs for the 2001-2003 biennium (extracted from multiple line items). These costs reflect the stormwater-related portions of these activities only. In addition, the cost does not reflect treatment costs for construction projects, maintenance costs, or retrofit projects.¹⁴

Stormwater technical assistance	\$160,000
GIS (geographic information system)	\$140,000
Regulatory compliance	\$155,000
Water quality program	\$590,000
Stormwater NPDES	\$470,000
Watershed support	\$340,000
ESA support	\$23,000
Administration	\$54,000
Cost-benefit analysis	\$10,000
Natural resource agency liaison	\$120,000
Stormwater retrofits	\$800,000
Design trainers	\$28,000
Direct project support	\$600,000
Permit compliance	\$150,000
Administration and Technical Support	\$3.64 million

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Maintenance \$7 million

The above costs exclude capital costs. Stormwater capital costs are embedded in individual capital project budgets, and range from 8 to 20 percent depending on project type and location.

WSDOT needs to determine how to pay for these costs.

WSDOT Operations Division estimated that new stormwater programs or activities would cost between \$500,000 and \$1 million per biennium.¹⁵

¹² Interview with Chris Waarvick, City of Yakima, September 12, 2000.

¹³ Interview with Dick McKinley, City of Walla Walla, August 15, 2000.

¹⁴ Interview with Shari Schafflein and Bert Bowen, WSDOT Environmental Affairs Division, September 13, 2000.

¹⁵ Interview with Al King, WSDOT Operations Division, August 22, 2000.

WSDOT is conducting a stormwater cost study that will be completed in the Fall of 2001. In addition, WSDOT has begun a stormwater benefit study with the University of Washington.

According to an estimate by the Washington Association of Water and Sewer Districts, construction costs will go up 30 percent as a result of stormwater regulations. One of its member districts (Soos Creek) has budgeted \$300,000 for ESA response.¹⁶

The Association of Washington Cities conducts an annual survey of surface water utility programs and their respective rate structures. The cost part of this survey is based on agencies' CIPs and 6-year plans. The results were similar to the Infrastructure Study done by the Washington Office of Community Development, with a total of \$500 million.¹⁷ Each transportation project has an additional 30 percent added to the project cost to cover stormwater requirements. These costs usually end up buried in each transportation project and so are not generally accounted for as stormwater [ed. note: one can conclude that about 25 percent of each transportation project budget goes to stormwater].

Washington Association of Counties has estimated the costs of implementing stormwater programs for counties and cities to exceed \$1 billion during the next 10 years.¹⁸ The association compiled cost estimates for 2001-2003 ESA/salmon recovery programs from 17 counties (not including some of Washington's most populated counties, such as King, Pierce, Yakima, and Clark). Included in these estimates were costs of 11 planning/programmatic activities and 6 capital activities, many of which are directly or indirectly related to stormwater. The total for all activities for all 17 counties is more than \$126 million.¹⁹ Below is a summary of the range of costs from the participating counties for each activity:

Planning/Programmatic Needs**

Critical Area updates to include Best Available

Science	\$15,000 - \$761,653
ESA-driven comprehensive plan work	\$1,000 - \$250,000
Shoreline Master Plan updates	\$7,000 - \$2,000,000
HB 2496 lead agency work	\$50,000 - \$2,359,585
HB 2514 watershed management	\$50,000 - \$1,000,000
Monitoring costs	\$5,000 - \$1,102,622
Stormwater program development, adoption	\$5,000 - \$359,242
Stormwater program enforcement	\$5,000 - \$393,848
Enhanced enforcement of critical areas/	

¹⁶ Interview with Hal Schloman, Washington Association of Water and Sewer Districts, August 9, 2000.

¹⁷ Interview with Jim Seitz, Association of Washington Cities, August 11, 2000.

¹⁸ Personal communication, Paul Parker, Washington Association of Counties, August 23, 2000.

¹⁹ "County Expenditures for ESA/Salmon Recovery Efforts." Letter from Paul Parker, Washington Association of Counties, September 18, 2000.

shoreline management	\$2,000 - \$750,640
Education/outreach	\$500 - \$1,788,373
<u>Litigation</u>	<u>\$25,000 - \$1,000,000</u>
Subtotal for Planning/Programmatic Needs**	\$28,500 - \$8,802,005

Capital Needs**

Stormwater implementation/improvements	\$5,000 - \$3,201,554
Fish passage improvement	\$25,000 - \$2,000,000
Nonpoint pollution control	\$50,000 - \$2,000,000
Habitat restoration projects	\$10,000 - \$7,217,063
Habitat acquisition	\$20,000 - \$5,000,000
<u>Flood management planning/implementation</u>	<u>\$4,000 - \$13,000,000</u>
Subtotal for Capital Needs**	\$44,000 - \$18,250,000

**Total: Programmatic/Planning and
Capital Needs****

\$72,500 - \$23,090,340

***Note: For each activity, some of the 17 counties have not provided cost estimates. In some cases, the activities are not applicable to that county and the activity will not be pursued. In other cases, counties do not have the means to provide even a rough estimate of what costs they will incur.*

Associated General Contractors (AGC) is planning to collect data about stormwater costs to take to the ESA task force. AGC expects to see a wide range of costs. It will cost \$10,000 to \$20,000 to do this survey, which the Washington State Legislature might fund through allocation to Ecology for AGC to conduct.²⁰

The Association of Washington Businesses estimated that stormwater costs can be in the millions of dollars per facility. Stormwater infiltration may be an alternative to off-site discharge but will still require approximately \$300,000 to \$500,000 for capital costs and \$10,000 to \$20,000 per year for operation and maintenance costs on a typical 5-acre industrial site.²¹ Businesses take these costs out of their profits, so there is a large amount of interest in the business community about funding strategies (e.g., low-interest loans, tax strategies) to pay for stormwater costs. Some businesses may not be able to pay for stormwater improvements and thus may relocate to or initially decide to locate in other states.

The National Association of Flood and Stormwater Management Agencies (NAFSMA) has conducted surveys of its members that are NPDES Phase 1 and Phase 2 jurisdictions to determine costs of stormwater programs. Phase 1 member jurisdictions reported expenditures averaging \$650,000 per community on the NPDES application process alone. The 54 percent of Phase 2 communities

²⁰ Interview with Willy O'Neill, Association of General Contractors, August 24, 2000.

²¹ Interview with Nathan Graves, representing Association of Washington Businesses, September 18, 2000.

surveyed that currently fund stormwater programs or activities spend upwards of \$4,000 per square mile, or an average of \$2.76 per capita on these programs.²²

According to a study CH2M HILL conducted for the Chesapeake Bay Program, significant infrastructure savings, including stormwater system costs, can be achieved through the use of preventative approaches, such as emphasizing higher density residential development in land use planning. The study reports that the marginal capital cost of providing capital facilities to new residential development is much lower when density is increased or infill development occurs than it is when the new development is built in unserved areas in a scattered form. The greatest reduction in total capital costs per dwelling unit from more efficient, high density residential development forms is at the subdivision or neighborhood level. This cost savings is smaller at the municipal, county, or regional level. Capital costs for providing regional services are most sensitive to population factors and service standards, and less sensitive to density, type, and location of new residential development. Regional services are generally provided in large increments of capacity, have long service lives, and often enable economies of scale in unit capital and operating and maintenance costs to be obtained.²³

²² Statement of the National Association of Flood and Stormwater Management Agencies on S. 1706, the Water Regulation Act of 1999, before the Senate Environment and Public Works Committee. Presented by Doug Harrison, General Secretary-Secretary, Fresno Metropolitan Flood Control District.

²³ CH2M HILL. Cost of Providing Government Services to Alternative Residential Patterns. Prepared for the Chesapeake Bay Program's Subcommittee on Population Growth and Development, May 1993.